

REMARKS

Claim 1-67 and 70 have been canceled and claims 68, 69 and 80 have been amended. Claims 71-79 and 95-130 have been withdrawn. Claims 68-69 and 80-94 are therefore presently under consideration in this application. The amendments to the claims are fully supported by the original claims and specification, for example, paragraph [0019] of the application as published (Pub. No. 20080016593). No new matter has been added by the amendments made herein. Entry of the amendments at this time is therefore respectfully requested.

Claim Objections

Claims 88-94 were objected to because they depend from a rejected claim. Applicant respectfully requests that this objection be withdrawn upon finding the independent claims to be allowable.

Claim Rejections – 35 U.S.C. § 112 – Enablement

Claims 68-70 and 80-88 were rejected under 35 U.S.C. § 112, first paragraph, for lack of enablement for the reasons set forth on pages 3-4 of the final Office Action. The Office Action states that while being enabling for a plant with a transgenic rootstock resistant to ZYMV and a non-transgenic scion, the specification does not reasonably provide enablement for a plant with a transgenic rootstock resistant to any viral disease with a non-transgenic scion. The Office Action appears to base the rejection on a perceived view that the state of the art teaching resistance to non-transgenic scion by a transgenic resistance rootstock is unpredictable, citing Dougherty et al. (1996, US Patent No. 5,583,021). Applicant respectfully traverses.

The test for enablement is whether one of ordinary skill would need to engage in undue experimentation to practice the claimed invention. (MPEP 2164.01). The fact that experimentation may be complex does not necessarily make it undue, if the art typically engages in such experimentation. (MPEP 2164.01). Many plant molecular techniques involve a significant amount of routine experimentation and should not be confused with undue experimentation.

Applicant has amended the claims in an effort to expedite the allowance the claims. The claims now specifically state that the transgenic rootstock resistant to the viral disease comprise a DNA construct designed for generating siRNAs targeted to the at least one segment of said viral genome (Independent Claim 68 is amended to include the subject matter of claim 70). In contrast to the amended claims, the DNA construct disclosed by Dougherty et al. encodes a plus-sense RNA molecule that is homologous to an RNA molecule required for replication of a target plant virus. While proposing possible mechanism of actions, Dougherty et al. particularly state that "The failure of a rootstock from a highly resistant line to induce a scion from a susceptible line in grafting studies suggests the activity is a programmed cell response not induced via a diffusible signaling molecule ..." (emphasis added). It is to be noted that the presently claimed invention shows for the first time that the resistance is induced from the rootstock to a non-transgenic scion.

Thus, the Office Action applies a view of the field that existed prior to but not after the inventors' discovery and teachings. Applicant agrees that without Applicant's disclosure it would have seemed unpredictable at the time. With Applicant's teachings and disclosure in hand, however, one skilled in the art would be enabled to produce a plant having a transgenic rootstock resistant to a viral disease, wherein the transgenic rootstock comprises a DNA construct designed for generating siRNAs targeted to at least one segment of the viral genome and a scion susceptible to the viral disease, with a reasonable expectation of success and without undue experimentation.

A recent independent study supports this, showing that with Applicant's disclosure and teachings fully enable one skilled in the art to produce the plants presently claimed. (See Brumin M. et al., Transgenic Res. 2009. 18:331-345). Brumin et al. demonstrate resistance to Grapevine virus A (GVA) of the Flexiviridae family. As described therein, (i) a GVA minireplicon can mediate gene silencing in *N. benthamiana* plants; (ii) transgenic plants expressing the GVA-minireplicon exhibited virus resistance specifically targeted against GVA; and (iii) minireplicon-mediated resistance was transmissible to nontransgenic scions grafted onto transgenic rootstocks (Brumin et al., page 340, Discussion). These results further support and

show that the presently pending claims were fully enabled at the time of filing. With Applicant's teachings and examples in hand, one skilled in the art is enabled to confer resistance not only for several viruses of the same family, but to viruses of different families.

The MPEP specifically states that the Examiner should assume compliance with the enablement requirement when an application includes a teaching of how to make and use invention "in terms which correspond in scope to the claims." This mandate may only be ignored when there is a basis to doubt the objective truth of the teaching. (MPEP 2164.04). Such doubt is not present here. Weighing the factors relating to determination of enablement overwhelmingly show that the presently claimed invention is fully enabled, that one skilled in the art, using Applicant's teachings and examples would be able to use and obtain the invention as presently claimed. As mentioned above, Applicant specifically taught and demonstrated to one skilled in the art how to obtain a plant having a transgenic rootstock resistant to a viral disease, wherein the transgenic rootstock comprises a DNA construct designed for generating siRNAs targeted to at least one segment of the viral genome and a scion susceptible to the viral disease, without undue experimentation.

Finally, according to the MPEP, as long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the scope of the claim, then the enablement requirement of 35 U.S.C. 112 is satisfied. (MPEP 2164.01(b)). Applicant provides at least one working example of the claimed invention. The present specification demonstrates and provides a working example of plants with resistance to ZYMV of the Potyviridae family. Resistance was successfully conferred to susceptible non-transgenic scion by resistant transgenic rootstock using the presently claimed invention.

Therefore, given the amended claims, the guidance provided by the specification, the working example, the level of skill in the art having Applicant's teachings in hand, and the supporting Brumin et al. reference, no undue experimentation would be required for a person skilled in the art to practice the invention as presently claimed. In view of this, Applicant respectfully requests that this rejection be withdrawn and that the claims be allowed.

AMENDMENT AND RESPONSE

Docket No. 15872.018

Title: "Engrafted Plants Resistant to Viral Diseases and Methods of Producing Same"

U.S. Serial No. 10/590,376

If there are any questions, the Examiner is invited to call Applicant's representative Rodney Fuller at (602) 916-5404 to resolve any remaining issues to expedite the allowance of this application.

Respectfully submitted,

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Date

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